CLAIMS:

1. A method of compensating for dc offset of a received signal transmitted over a channel having a plurality of paths, the received signal comprising a modulated data signal and modulated known training sequence signal bits, the method comprising the steps of:

constructing from the known training sequence signal, a first regression matrix;

constructing from the first regression matrix, a trend matrix wherein each column of the trend matrix is a path-trend vector;

deriving a neutralized second regression matrix from the first regression matrix and the trend matrix; and

utilising the neutralized second regression matrix to compensate for dc offset of the received modulated data signal.

2. A method according to claim 1, wherein the path-trend vectors are derived by

$$\Psi_k = \frac{\Omega}{(n-m+1)}\Phi_k = \frac{\omega\cdot\omega^*}{(n-m+1)}\Phi_k$$

wherein Ψ_k is a path-trend vector Ω is a Toeplitz matrix generated by a rotation vector ω (ω^* is the de-rotation vector) Φ_k is the corresponding element of the first regression matrix, n is the number of symbols in

the training sequence and m is the number of paths of the channel.

3. A method according to claim 1, wherein the neutralized second regression matrix comprises the difference between the first regression matrix and the trend matrix.

4. A method according to claim 1, wherein the neutralized second regression matrix comprises the difference between the first regression matrix and the real part of the elements of the trend matrix.

5. A method according to claim 4, wherein the real part of the elements of the trend matrix are scaled by a suppression factor.

6. A method according to claim 1, wherein the dc offset is estimated from a trend vector of the received signal, the trend matrix and channel estimation.

7. A method according to claim 6, wherein the channel estimation is derived using Least-Squares technique.

8. A method of calculating an unbiased channel estimation for a multi-path propagation channel, the method comprising the steps of:

constructing a first regression matrix from a known training sequence signal of an input signal;

constructing from the first regression matrix, a trend matrix wherein each column of the trend matrix is a path-trend vector;

deriving a neutralized second regression matrix from the first regression matrix and the trend matrix; and

calculating the unbiased channel estimation using the neutralized second regression matrix.

9. A method according to claim 8, wherein the path-trend vectors are derived by

$$\Psi_k = \frac{\Omega}{(n-m+1)}\Phi_k = \frac{\omega \cdot \omega^*}{(n-m+1)}\Phi_k$$

wherein Ψ_k is a path-trend vector Ω is a Toeplitz matrix generated by a rotation vector ω (ω^* is the de-rotation vector) Φ_k is the corresponding element of the first regression matrix, n is the number of symbols in the training sequence and m is the number of paths of the channel.

10. A method according to claim 8, wherein the neutralized second regression matrix comprises the difference between the first regression matrix and the trend matrix.